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Abstract

This study develops projections of future spending and savings from electricity efficiency programs funded by electric utility customers in the United States through 2030 based on three scenarios. Our analysis relies on detailed bottom-up modeling of current state energy efficiency policies, demand-side management and integrated resource plans, and regulatory decisions. The three scenarios represent a range of potential outcomes given the policy environment at the time of the study and uncertainties in the broader economic and state policy environment in each state. We project spending to increase to $8.6 billion in 2030 in the medium scenario, about a 45 percent increase relative to 2016 spending. In the high case, annual spending increases to $11.1 billion in 2030 and remains relatively flat in the low case ($6.8 billion in 2030). Our analysis suggests that electricity efficiency programs funded by utility customers will continue to impact load growth significantly at least through 2030, as savings as a percent of retail sales are forecast at 0.7 percent in the medium scenario and 0.98 percent in the high scenario.

Keywords

Energy efficiency, electric utility programs, utility resource planning, Energy Efficiency Resource Standard, public utility commissions

1. Introduction

Voluntary energy efficiency programs have been funded by utility customers for more than 30 years and currently are offered in nearly every state. Electricity demand has been largely flat in many states for the past ten years, in no small part due to electricity efficiency programs funded by utility customers. Appliance and equipment energy efficiency standards are also having a big impact, along with tighter building codes, tax credits, and finance programs. These programs have a ripple effect on investment across the electricity sector, with impacts on the future of generation, transmission and distribution system decisions. For example, in recent years, there has been a wave of power plant retirements, as generators are squeezed between low natural gas prices, declining costs of wind and solar, environmental and other regulatory costs, and nearly flat demand due to energy efficiency gains.

Spending on programs funded by electric utility customers grew by about 20 percent between 2011 and 2016, reaching ~$5.8 billion. Spending and associated energy savings have fluctuated over time with state goals, energy prices and market trends, among other factors. A key question for policymakers, regulators, utilities and customers is the likely role of electricity efficiency programs going forward. Have program administrators captured most of the “low-hanging” fruit of low-cost efficiency technologies? Can energy efficiency continue to play an important role as utility resource and grid needs evolve?

Given these challenges, several recent studies have argued that traditional energy efficiency strategies need to be honed and refreshed (Nadel 2019) and that energy efficiency needs to be redefined to focus more on energy optimization (e.g., obtain the greatest value from low-cost, emissions-free energy sources when and where they are available) [Sliger and Colburn 2019]. In this study, we provide a forward-looking (to 2030), bottom-up assessment of the potential impact of existing and likely policies and market conditions that promote or constrain future spending and savings for electricity efficiency programs funded by utility customers in all U.S. states (Goldman et al. 2018).

2. Approach

The study includes three scenarios (low, medium and high cases) for 2030, with updated projections of spending and savings for interim years (2020 and 2025). The scenarios represent a range of potential outcomes given the policy environment at the time of the study and uncertainties in the broader economic and state policy environment in each state. We reviewed relevant state statutes, regulatory commission decisions, and filings of electric utilities (investor-owned utilities, rural electric cooperatives and publicly owned utilities) and other efficiency program administrators. We also conducted more than 50 interviews with regulatory staff, energy efficiency experts, program administrators and other stakeholders to help inform scenarios and key assumptions.

2.1 Modeling future efficiency spending and savings

Our forecast of electricity efficiency program spending and savings to 2030 considers past and current performance of program administrators and key policy drivers in each state. Policies may establish targets—voluntary or mandatory—for energy savings. Some policies require integration of efficiency into electricity system planning and some influence the utility's motivation to acquire efficiency savings. These policy drivers include energy efficiency resource standards (EERS), statutory requirements that utilities acquire all cost-effective energy efficiency or include efficiency under state renewable portfolio standards, voluntary savings targets, system (or public) benefit charges (SBC) that fund efficiency, integrated resource planning (IRP) requirements, demand-side management (DSM) plans, and policies intended to reduce utilities' disincentives (e.g., decoupling) or provide a financial incentive to promote energy efficiency. Table 1 identifies states where these policy drivers apply.

Table 1. Policy drivers for spending and savings for electricity efficiency programs*

Key Policy Drivers	States Where Applicable to Electricity Efficiency Programs
Energy efficiency resource standard	AZ, CA, CO, HI, IL, MD, MI, MN, NJ, NM, NV, NY, OH, PA, TX, VA, VT, WI
Energy efficiency eligibility under state renewable portfolio standards	MI, NC, NV, OH
Voluntary savings target	IA, IN, MN, MO, UT
Statutory requirement that utilities acquire all cost-effective energy efficiency	CA, CT, MA, ME, NH, OR, RI, VT, WA
System/public benefit charge	CA, CT, DC, HI, MA, MT, NH, NJ, NY, OH, OR, RI
Regional Greenhouse Gas Initiative	CT, DE, MA, MD, ME, NH, NY, RI, VT, *NJ*[1]
Integrated resource plan	28 states (primarily in the West and South)
Demand-side management plan, multi-year energy efficiency budget or both	46 states
Utility business model (e.g., decoupling, lost revenue adjustment, shareholder incentives for performance)	27 states

**As of August 2018*

Conversely, some states have adopted policies that effectively constrain the magnitude of available savings or spending on energy efficiency programs (see Table 2). We explicitly model policy constraints such as caps on program spending or rate impacts and statutes that allow large commercial and industrial (C&I) customers to opt out of energy efficiency charges and programs.

[1] New Jersey will join RGGI in 2020.

Table 2. Key policy constraints on efficiency program savings and spending*

Key Policy Constraints	Examples of States With Policy
Statutory or regulatory caps on rate impacts or program spending	MI, PA, TX, WI
Legislative or executive redirection of efficiency funding to other state purposes	CT, NJ
Large commercial and industrial opt out from efficiency charges and programs[2]	AR, IA, IL, IN, KY, ME, MO, NC, OH, OK, SC, VA, WV

**As of August 2018*

Opt-out policies for large C&I customers allow eligible customers, typically above a certain threshold of demand or energy consumption, to stop paying charges for energy efficiency programs. C&I opt-out policies may reduce available funding sources for efficiency programs for all types of customers, and program administrators are not able to claim savings from customers that have opted out. Berkeley Lab (LBNL) researchers reviewed utility DSM plans and included information on the amount of retail load that had opted out of participating in utility efficiency programs for those states that have or are considering opt-out policies.

We distinguish among three timeframes: historical, policy period and post-policy period (see Figure 1). In the historical period (2013-2016), we collect information on actual program spending and savings to establish an initial relationship between program costs and first-year electricity savings. The duration of the policy period (beginning in 2017) varies by state and depends on its specific policies.[3] In most states, the policy period does not include the entire study period. Thus, we define a post-policy period (from the time that key state policies expire to 2030) during which commitments have ended or are considerably less firm. For this post-policy period, we relied on interviews with state and regional experts. For the high scenario, we considered their view of best practices in the region to define a range of savings targets for each state.

[2] Fifteen other states have some provision for self-direction of efficiency charges. Under a self-direct paradigm, these customers can choose to spend the fees in their own facilities to achieve energy savings, or they can pay into an aggregated pool of funds the utility collects to fund all energy efficiency programs (see State Energy Efficiency Action Network, 2014).

[3] We compiled information on state policy drivers as of August 2018.

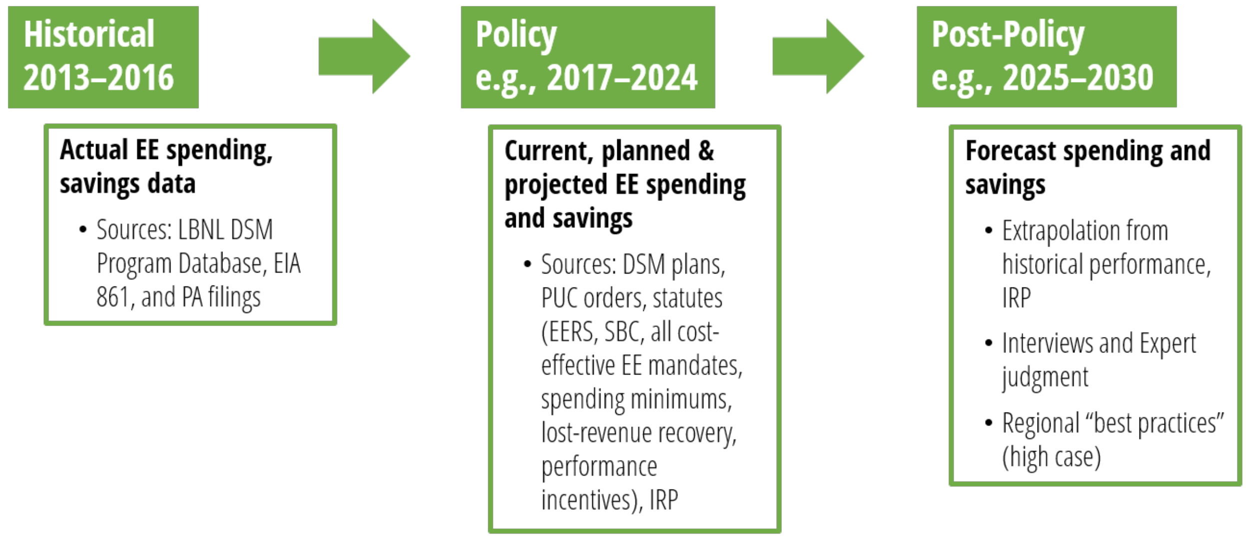

Figure 1. Modeling framework: Historical, policy and post-policy periods

2.2 Developing the Scenarios

The three scenarios represent alternative pathways for the evolution of electricity efficiency programs funded by utility customers during the post-policy period.

- The *medium scenario* largely represents a continuation of current practices and policies, subject to known policy and market constraints. We project that most states generally stay the course on policies and meet savings targets. Some states are expected to expand their commitment to efficiency based on recent legislation or regulatory commission decisions, while other states are expected to throttle back their commitment to efficiency.
- The *low scenario* represents a less prominent role for energy efficiency. States that are new to efficiency adopt a "go slow" approach; other states retreat from the current policy path—for example, EERS are not continued or are extended with lower savings targets, or states adopt new policies that constrain efficiency spending.
- The *high scenario* explores the possibility that states increase energy efficiency targets and budgets, driven by regional best practices that are adopted by other states in the area, and adopt favorable utility business models and savings targets based on achievable energy efficiency potential.

This study does not envision or quantify the impact of potential new drivers and delivery mechanisms, although in section 4 we highlight emerging challenges faced by program administrators and policymakers and, in some cases, ways to address them.

3. Results

3.1 Electricity Efficiency Program Spending and Savings: National Overview

Spending on electricity efficiency programs (in nominal dollars) is expected to increase in all three scenarios between 2016 and 2030. Projected spending by program administrators includes both administrative costs and incentives. In the medium case, we project that it will increase to $8.6 billion in

2030 compared to ~$5.8 billion in 2016, an increase of more than 45 percent (see Table 3). Projected growth in program spending tends to be front-loaded with increases concentrated in the first nine years (to 2025). This dynamic of front-loaded growth in spending is attributable to our methodological approach as well as our cautious assessment of efficiency market dynamics in the later years of our study period.[4] In the high case, annual spending increases to $11.1 billion in 2030, 90 percent higher than 2016 levels. In the low case, spending is projected to decrease in 19 states in 2030 compared to 2016 levels. National spending remains fairly flat, increasing to just $6.8 billion in 2030.

Table 3. Projected spending on electricity efficiency programs: Three scenarios

	Projected Spending ($ Billion)				Projected Spending as % of Retail Revenues			Average Annual Spending Growth		
	2016	2020	2025	2030	2020	2025	2030	2016-2020	2020-2025	2025-2030
Scenario										
Low	$5.8	$6.3	$6.8	$6.8	1.6%	1.4%	1.2%	2.2%	1.7%	0.1%
Medium		$7.1	$8.3	$8.6	1.7%	1.8%	1.6%	4.3%	3.6%	0.6%
High		$7.9	$10.3	$11.1	2.0%	2.2%	2.1%	7.1%	6.2%	1.4%

Electricity efficiency program spending in 2030 is projected to account for about 1.2 percent in the low case, 1.6 percent of retail electric utility revenues in the medium case, and 2.1 percent in the high case. Except for the high case, these levels are all lower than in 2016 (1.69 percent). Spending as a percent of retail revenues provides an indication for the potential rate impacts of efficiency programs.

Participating customers typically pay for a portion of project costs—in some cases, a significant share. Thus, we also estimated *total* market activity leveraged by electricity efficiency programs, drawing on results from the LBNL Cost of Saved Energy project.[5] For 2016, we estimated this value at about $11.6 billion. If we assume that the relationship between net participant costs and program administrator costs continues in the future, the total market size of electricity efficiency programs in 2030 would increase to $17.2 billion in the medium scenario and range from $13.6 billion in the low scenario to $22.2 billion in the high scenario.

[4] For most states, we assume that when a binding EERS expires, savings targets will continue at levels consistent with the last year the standard is in effect. We also have higher confidence in our modeling of spending (and savings targets) in the policy period compared to the post-policy period because we can typically rely on multi-year DSM plans. Finally, our modeling of the later years of our study period often relies on utility IRPs and their characterization of achievable potential for energy efficiency. Some utility IRPs are projecting reduced savings levels from 2025 on, which impacts our projections of spending from 2025 to 2030. Utility estimates of remaining achievable potential are often conservative in their IRPs because some utilities have suggested that achievable potential for their efficiency programs is likely to be lower in the future due to tightening federal efficiency standards and transformation of certain end-use markets (e.g., increased market penetration of light-emitting diode lamps).

[5] Total costs include costs incurred by participating customers. On a national basis, the total cost of saved electricity was double the program administrator cost of saved electricity between 2009 and 2015: $0.05/kWh vs. $0.025/kWh (Hoffman et al. 2018).

In terms of energy savings, in 2016, efficiency programs funded by utility customers saved 27.5 terawatt-hours (TWh) of electricity per year, equal to 0.74 percent of electric utility retail sales (see Table 4). Efficiency programs funded by customers offset at least 1 percent of investor-owned utility load in 23 states, with four states exceeding savings of 2 percent of sales (Hoffman et al. 2018). In these states, utility efficiency programs are offsetting a significant share of forecasted load growth over time. In the medium case, we project incremental annual electricity savings to increase very modestly to 28 TWh in 2030. Savings rise through 2025, and then decrease by 1.6 TWh by 2030. Savings are projected to decrease in all regions except the South. The anticipated decline in relative program savings after 2025 across all scenarios is driven primarily by transformation of certain end-use markets (e.g., increased penetration of light-emitting diode lamps) and increased reliance on complementary efficiency policies (e.g., equipment standards). This decline does not represent a reduction in overall efficiency savings, just in the amount utility programs are able to claim. In the high case, annual savings increase to 38.0 TWh by 2030, 38 percent higher than savings achieved in 2016. In the low scenario, first-year savings are 20.3 TWh in 2030, a decline of more than 27 percent compared to 2016 levels.

Table 4. Current and projected annual incremental electricity savings from utility customer-funded programs (TWh)

	Annual Electricity Savings (TWh)			
Scenario	*2016*	*2020*	*2025*	*2030*
Low		23.6	22.5	20.3
Medium	27.5	27.8	29.6	28.0
High		31.7	38.9	38.0

3.2 Regional Trends in Electricity Efficiency Program Spending and Savings

Program spending varies widely by region today. We expect regional shares of national spending to shift over time. In 2016, states in the West and Northeast accounted for 64 percent of national spending on electricity efficiency programs. Energy efficiency services markets are relatively mature in these regions, with many states implementing programs for decades. In contrast, states in the South and Midwest accounted for 36 percent of spending in 2016. In 2030, these regional values represent the estimated shares of national spending in the *low scenario*. However, in the *high scenario*, states in the South assume an increasingly prominent role, with spending projected to increase to $3 billion in 2030 in the South, compared to $1.0 billion in 2016 (see Figure 2). Thus, in the high scenario in 2030, the relative share of spending for states in the West and Northeast decreases to 55 percent of the national total, while states in the South and Midwest account for 45 percent. Following are expected trends by region.

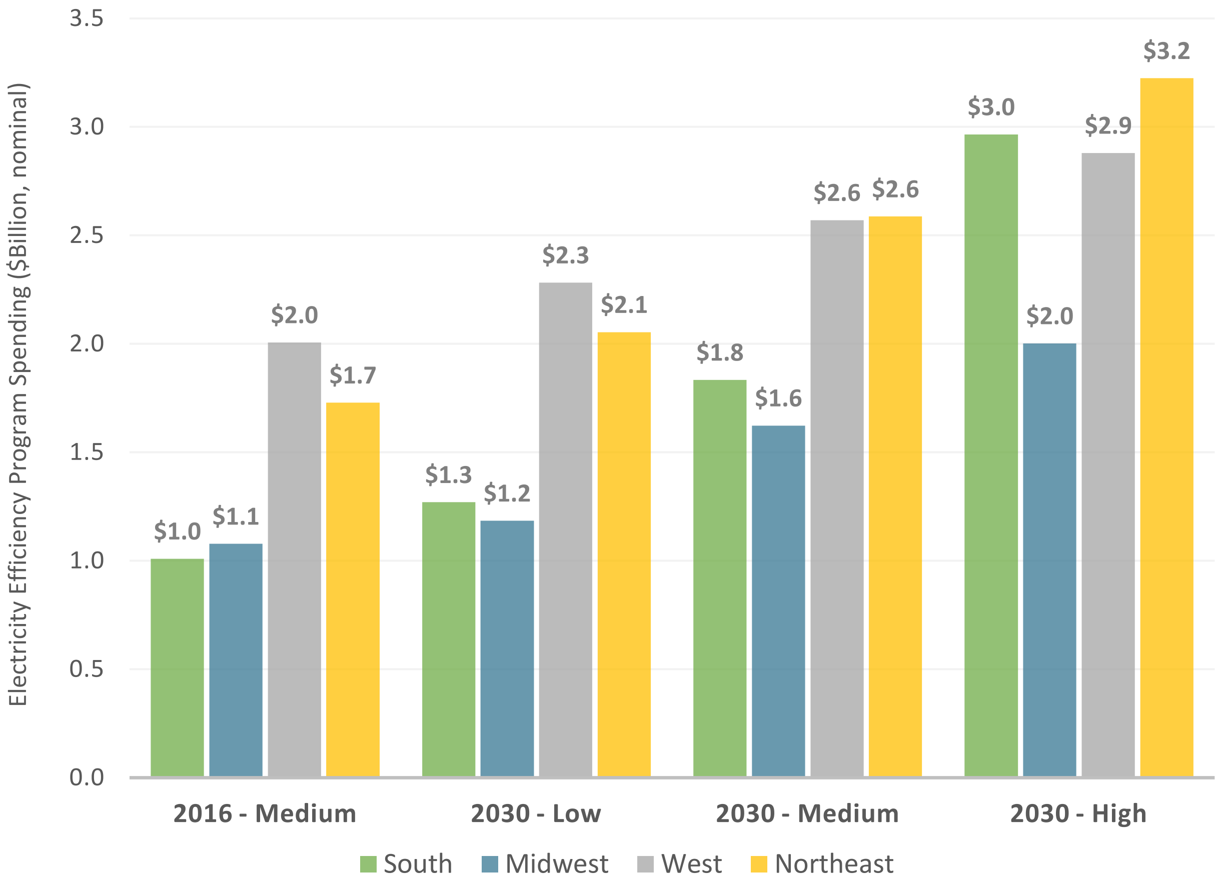

Figure 2. Electricity efficiency program spending by region in 2016 vs. 2030 scenarios

- *Midwest* - Efficiency program spending in 2030 is driven primarily by three populous states (IL, MI and MN) that have made long-term policy commitments in legislation. The future trajectory of efficiency spending in the region will be heavily influenced by policy constraints (e.g., opt-out policies, spending caps), long-term resource planning processes (e.g., MI and MN), and the extent to which utilities are motivated by business model policies to achieve higher savings goals.
- *South* - The range in spending in 2030 across the three scenarios is quite large ($1.3 to $3 billion) because utilities in many states have proposed savings goals in DSM plans or IRPs that are modest relative to the achievable potential. Thus, there is significant potential upside in the high scenario, as well as significant uncertainty regarding the extent to which policies that may constrain savings (e.g., large C&I customer opt-out) will spread to other states in this region.
- *West* - California accounts for more than 60 percent of spending in the region. We project that spending will increase by $330-480 million compared to 2016 levels, driven primarily by state legislation. Lower spending is projected in the Pacific Northwest states in all scenarios in 2030 compared to 2016, while we expect most Southwest states to sustain long-term commitments to energy efficiency driven by state statute and favorable utility business models.

- *Northeast* - Efficiency program spending is projected to increase under all three scenarios, ranging between $2.1, $2.6 and $3.2 billion in the low, medium and high scenarios compared to $1.7 billion in 2016. All nine states in the Northeast have made strong policy commitments to energy efficiency, and recent legislation in several states (NY, NJ, NH) increased savings (or spending) goals. We project that several of the historic leaders in the region (MA, RI, VT, CT) will maintain or somewhat reduce spending levels on utility customer-funded programs due to anticipated saturation of efficiency potential, greater emphasis on complementary strategies (e.g., equipment standards, financing), concern about potential retail rate impacts, or state budget constraints.

Trends in first-year savings at the national level are driven by the underlying patterns in efficiency program activity at the regional and state level. The South is the largest Census region, with 16 states and the District of Columbia, comprising more than 40 percent of national electricity load. Projected electricity savings increase significantly in the South by 2030, particularly in the high scenario, with projected savings significantly greater compared to other regions: 12.9 TWh in the South vs. 7.2, 8.3 and 9.2 TWh in the Northeast, Midwest and West, respectively (see Figure 3).

Savings in the 17 states in the South account for 34 percent of the national savings from electricity efficiency programs in 2030 in the high scenario (compared to 19 percent in 2016). In the high scenario, we anticipate that: (1) several large states (FL, TX, TN) will significantly increase their efficiency savings targets to levels that are closer to the achievable potential and (2) program administrators in several states increase their efforts, motivated by attractive utility business models (e.g., OK, NC, SC) or targets set in EERS legislation (MD, VA). Savings as a percent of electric utility retail sales in 2030 still remain higher in the Northeast (1.6 percent), West (1.2 percent), and Midwest (1.1 percent) than the South (0.7 percent).

Savings from electricity efficiency programs impact forecasts of future load growth and ultimately influence the supply-side resource needs of utilities.[6] To illustrate the potential impact of utility efficiency programs, in the high case, annual savings are projected to be 0.98 percent of retail sales in 2030. If this high efficiency scenario accurately depicts the future, national load growth—which we projected using data from Energy Information Administration (EIA) Form 861 and Annual Energy Outlook (EIA 2017; EIA 2018)—would be reduced to 0.29 percent per year between 2016 and 2030. By comparison, EIA projects that national load would grow by 0.59 percent per year assuming no efficiency incremental to that embedded in EIA's data.[7]

[6] Electricity retail sales forecasts usually reflect the amount of electricity expected to be purchased by end users after accounting for energy efficiency; that is, the load forecast is lower than it would be in the absence of efficiency programs and other energy-saving initiatives.
[7] The estimates of program savings implicitly embedded in the EIA AEO load forecast are inherently inexact. Thus, these comparisons of future program impacts under different efficiency program scenarios should be regarded as approximations.

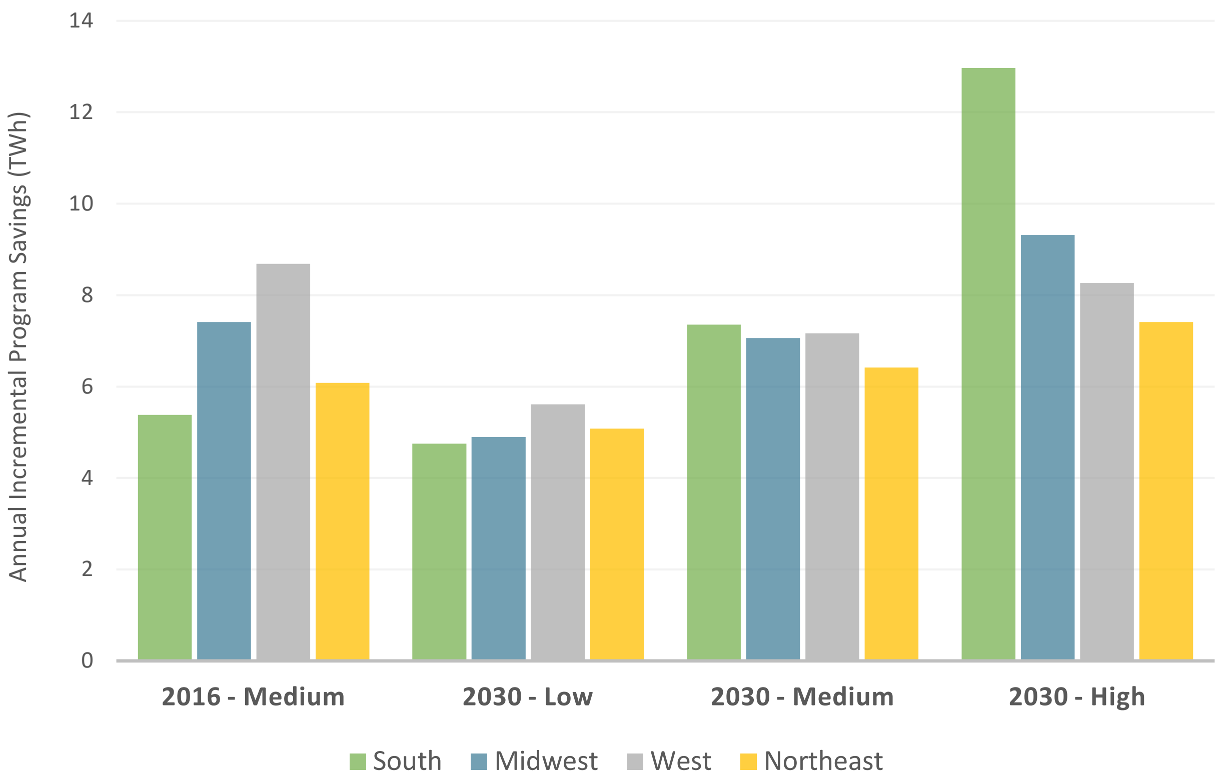

Figure 3. Annual incremental program savings by region in 2016 vs. 2030 scenarios

4. Discussion

It is important to identify for policymakers, utility regulators, utilities and other program administrators the key issues and challenges ahead that contribute to uncertainty in forecasting future pathways for energy efficiency. These include factors that are largely external to program administrators and state regulators (e.g., broader market forces and conditions) as well as policy choices and regulatory and program practices. We highlight several factors that may be critical to the future trajectory of customer-funded efficiency programs.

- **A changing economy and shifting policy objectives complicate forecasting of future electricity loads.** EIA's projected growth rate of 0.59 percent from 2016 to 2030 (EIA 2017; EIA 2018) is quite modest compared to historic growth rates for electricity sales (1.3 percent per year since 1990). This trend of slowly increasing or flat electric loads is driven in large part by the steady decline of energy intensity—the amount of energy used per unit of economic growth—over many years due to energy efficiency, structural changes in the economy and fuel economy improvements (EIA 2018).[8]

  However, several recent studies have explored the potential long-term impacts of "beneficial electrification" driven primarily by adoption of electric vehicles, heat pumps and select industrial

[8] EIA estimates that U.S. energy intensity has decreased from 12,000 to 6,000 Btu per dollar from 1980 to 2015 and will be 4,000 Btu per dollar in 2040 (EIA 2018).

applications on future electricity sales and peak demand (Mai et al. 2018). If states decide to promote electrification as a policy objective, then policymakers may have to reassess how they define energy efficiency policies and guidelines for efficiency programs, and utilities and other program administrators will have additional technical opportunities for investments in high efficiency technologies (Dennis 2016). For example, the California Public Utilities Commission recently revised its policies to allow equipment and appliances that switch between energy sources that both save energy and reduce pollution to participate in efficiency programs, opening the door for fuel substitution (e.g. natural gas to electricity) and efficient electrification (CPUC 2019).

- **The cost of electricity supply options has declined.** In recent years, utilities and utility customers have benefitted from low natural gas prices and declining costs for natural gas-fired and renewable generation technologies. Low gas prices and increasing levels of renewable generation technologies with zero marginal cost translate into reduced efficiency program benefits (e.g., avoided energy and capacity costs), which may in turn constrain program budgets.

  Moreover, the evolving generation mix, current economics of supply-side options, and evolving resource needs of utilities are changing the value proposition for energy efficiency. The result is a greater focus on time-varying value, including reducing peak system demand (Mims at al. 2017b; Mims Frick and Schwartz 2019) and locational value (e.g., for load relief on distribution systems), more emphasis on controllable loads (e.g., to increase system flexibility) (ICF 2018), and more interest in bundling demand-side options such as energy efficiency, demand response, distributed generation and storage, and electric vehicles in order to provide a variety of grid services (Mims and Schwartz 2018).[9]

- **Federal and state standards and building codes will moderate savings opportunities for utility programs.** Electricity savings from complementary strategies such as equipment standards and building energy codes will increasingly impact utility efficiency programs. For example, in the last decade, estimated annual savings from electricity efficiency programs were roughly comparable to annual savings from efficiency standards.[10] However, for the 2017 to 2030 period, the average annual incremental savings from appliance, equipment and lighting standards may increase substantially compared to the previous period (e.g., 2002-2016), which may make it more challenging for efficiency program administrators to obtain cost-effective savings.

- **State leadership drives institutional frameworks for energy efficiency.** Energy efficiency resources have distinctive characteristics that require state regulatory commissions to establish

[9] The U.S. Department of Energy's Grid-Interactive Efficient Buildings initiative is focused on advancing the capability of distributed energy resources to adjust a building's load profile across different timescales to provide demand flexibility while co-optimizing for energy cost, grid services, and occupant needs and preferences in a continuous and integrated way. See https://www.energy.gov/eere/buildings/grid-interactive-efficient-buildings.

[10] ACEEE (2016) estimates that savings (gross) for utility customer-funded electricity efficiency programs averaged 27 TWh per year between 2013 and 2016 (and 21.5 TWh per year between 2006 and 2016). For appliance, lighting and equipment standards that took effect between 2002 and 2016, the LBNL Energy Efficiency Standards Group projected annual savings to be about 27 TWh per year.

an institutional framework for effective oversight of utility customer-funded programs. Elements of the framework include: (1) stakeholder input on program design, with program success dependent on customer acceptance and adoption; (2) aligning the utility's financial interest in pursuing cost-effective efficiency with a state's policy goals, given the disincentives that exist under traditional utility regulation; and (3) measurement and verification of savings. Many leading states have successfully grappled with these institutional and regulatory policy issues. A variety of approaches have proven to be effective. Our high scenario assumes that in states that are newer to efficiency, legislatures and regulatory commissions provide leadership in defining energy efficiency policy objectives, establish clear roles and responsibilities for program administrators, and devote sufficient staff (or technical consultant) resources to effectively oversee acquisition of large-scale energy efficiency portfolios.

- **Program portfolios will need to evolve to continue to capture cost-effective electricity savings.** During the timeframe of this study and particularly in the later years (2025-2030), we expect that utilities and other program administrators will grapple with several significant challenges in developing a cost-effective portfolio of efficiency programs.
    - **New programs** - Program administrators will have to look for additional technical opportunities for saving electricity to offset their historic reliance on lighting programs.
    - **Large customer opt-out** - Program administrators in states that allow large C&I customers to opt out of paying for and participating in efficiency programs are likely to develop program designs that focus more on smaller and mid-size C&I customers. The cost of saved electricity for programs that target smaller C&I customers has historically been higher than programs for larger customers, putting upward pressure on program costs. For large C&I customers, program administrators also may focus more attention on Strategic Energy Management and the ISO 50001 standard to systematically track, analyze and plan energy use to continually improve energy performance—reducing operating costs and increasing productivity and competitiveness (State and Local Energy Efficiency Action Network 2016).
    - **Achieving deeper savings** - In states with more stringent efficiency savings goals for future years, program administrators will need to design and implement programs that can achieve deeper savings for participating customers and have a broader reach in terms of market penetration. Achieving higher market penetration rates includes targeting and reaching traditionally underserved markets (e.g., small commercial, multifamily, rental housing, non-owner-occupied commercial buildings) in far greater numbers than current practice. Program administrators also will need to design new, innovative programs that offer different strategies and services that are attractive to customers. Examples may include strategic energy management programs for industrial customers, greater reliance on building and industrial controls, programs that focus more on upstream/midstream market interventions (e.g., incentives to retailers, vendors), competitive procurement processes to meet distribution system needs that are open to aggregators that offer bundles of demand-side services and technologies, behavior-based programs using advances in data-based technologies and strategies, programs that combine technical assistance with incentives and

financing (e.g., green bank, on-bill financing), and programs that integrate delivery of electric and gas efficiency programs. Program administrators also can consider leveraging efforts of state and local governments and private providers to advance efficiency such as building energy benchmarking (Mims et al. 2017a) and Property Assessed Clean Energy (PACE) financing programs. In addition, performance-based regulation may play a role in utilities achieving deeper savings in the future, building on current practice in some states today (e.g., New York).

As these examples illustrate, energy efficiency program portfolios are likely to evolve significantly between now and 2030. Program administrators and state regulatory commissions face emerging challenges, such as the increased impact of complementary strategies (e.g., standards), the decreasing costs of some supply-side resource options, and adapting the value proposition for energy efficiency to reflect changing utility system needs. The degree to which program administrators and states address these challenges is likely to heavily influence the longer term pathway for spending and savings on efficiency programs for utility customers.

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